

## Original Article

# The Effectiveness of Cognitive-Behavioral Play Therapy on Pain Tolerance and Trait-State Anxiety Among Children with leukemia cancer in Isfahan City

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## Abstract

**Introduction:** Due to the painful and long-term treatments of cancer, children with cancer may suffer from severe psychological problems such as anxiety and decreased level of pain tolerance. Accordingly, psychological treatments such as play therapy can be helpful in this regard. The purpose of this study was to determine the effectiveness of cognitive-behavioral play therapy on pain tolerance and trait-state anxiety in children with cancer in Isfahan.

**Method:** The statistical population of this study was all children aged 9 to 12 years old who were referred to specialized cancer clinic of Isfahan in 2016. 30 of them were selected through purposeful sampling and randomly assigned into two groups of experimental and control. The results were analyzed using covariance analysis.

**Results:** The results of data analysis indicated that cognitive-behavioral therapy games resulted in increased pain tolerance and decreased trait anxiety in children with cancer ( $p < 0.05$ ).

**Conclusion:** According to the findings of this study, cognitive-behavioral play therapy can be used as a complementary therapy to relieve anxiety and increase pain tolerance in these children.

**Declaration of Interest:** None.

**Key words:** Cognitive-Behavioral Play Therapy, Pain Tolerance, Trait Anxiety, State Anxiety, Cancer.

## Introduction

Cancer is a type of disease in which body cells are abnormally proliferated in a malignant tumor, which results in the destruction of healthy tissues in the body. The exact cause of the disease is unclear, but researchers consider genetic causes or external causes such as confronted with viruses or carcinogens effective in this regard(1). Cancer is known as the second cause of death in some countries(2) and in Iran, after cardiovascular disease and accidents is the third cause of death(3). Unfortunately, cancer, in addition to adults, also affects children, so that cancer is

recognized as the second leading cause of death among children(4). Studies have also shown that childhood cancer has increased by 13% from 2001 to 2010, relative to the 1980s (5).

What seems obvious is that cancer, due to the severity of symptoms and the resulting pain, the length of the treatment and the complications of the treatment, affects the various aspects of the child's life(6). On the other hand, pain tolerance is lower in children than in adults, and usually children with cancer exhibit different behaviors than adults(7). Pain

for children is a complex concept, and the inability to reduce it can have a profound effect on their physical and psychological state(8). Cancer and the resulting pain lead to anxiety in them, which, in turn, exacerbates the initial problems(9). Studies have also shown that even after treatment, these children have severe anxiety that suggests the need for supportive interventions(10). In addressing the anxiety problem in children with cancer, we must talk about the two concepts of trait anxiety and state anxiety. Trait anxiety is a personality characteristic that exists over a long period of time and is measured on the basis of observation of physical, emotions states and cognitive behaviors in a person, while state anxiety emerges as a result of a stressful situation due to decreased ability to manage and control emotions, and leads to the changes in behavioral, cognitive and emotional ability(11). Research has shown that trait anxiety is associated with poor responsiveness to treatment and worsening of cancer(12, 13).

In recent years, a great deal of emphasis has been placed on non-pharmacological treatments as a means of reducing pain and psychological problems in order to increase the compliance of the patient with the disease and reduce her/his anxiety(7). One of the treatments that can be used to reduce anxiety and increase pain tolerance in children is play therapy, because children's experiences are summarized in their plays, and the play can be the most serious child's effort or experience and the most basic and natural means to communicate(14), that the child's deprivation of it means the disconnection of this communication language. One type of play therapy is cognitive behavioral play therapy. Cognitive-behavioral play therapy includes interventions based on a cognitive-behavioral approach in the form of a play. The cognitive-behavioral play therapy is different from the indirect play therapies in which the avoidance of direct discussion is emphasized. This approach emphasizes the correction (modifying) of irrational beliefs and contributes to the growth of thoughts and adaptive behavior(15). Accordingly, it seems that play therapy in general and cognitive behavioral play therapy in particular can

reduce the psychological problems of children with cancer. In this regard, research has shown that play therapy has been led to anxiety reduction in children with cancer(16, 17). The study conducted by Scarponi and Pession(18) showed that play therapy increases the control of pain in children with tumors. Chari and colleagues(19) found that play therapy can reduce depression and increase the positive emotions and levels of adaptation in children with cancer. Although the previous studies have examined the effectiveness of play therapy on anxiety disorders in children with cancer, research has not yet been conducted to evaluate the effectiveness of this treatment on the reduction of state and trait anxiety, and on the other hand, due to the limitations in studies that examined the effectiveness of a play therapy on pain tolerance in children with cancer, the aim of this study was to investigate the effectiveness of play therapy training on tolerating pain and trait and state anxiety in children with cancer.

### **Method**

The statistical population of this study were all children aged 9 to 12 years with cancer who referred to the cancer clinics in Isfahan. The research sample was selected using purposeful sampling. Thus, two clinics were randomly selected among the clinics in Isfahan. By referring to these clinics and distributing questionnaires among children with cancer, children who had scores more than 20 in both instruments were selected and divided into two groups of 15 (experimental and control. Inclusion criteria were willingness to participate, not having specific psychological problems or disorders and, at least one year of diagnosis, hospitalization more than 3 times, and a high score in the questionnaire. The exclusion criteria the reluctance to attend the sessions. The content of these training sessions is based on improving the parent-child relationship and creating empathy and acceptance by the parents for the child.

### **Materials**

**Pain intensity scale:** The Oucher's pain intensity scale was developed by Beyer

(1984). This tool is in the form of a poster and has two parts. The first part consists of six pictures of the child's face with varying severity of pain, ranging from 0 to 5, which zero indicates no pain and 5 too much pain. This part is for children under 3 years of age. The second part is a numeric column of 0 to 100. The number that the child chooses will indicate the score of his/her pain. This tool has been used in various researches and its validity has been approved(21-23) . In this research by Mehdi Pourabri and his colleagues by reviewing the opinion of 10 experts, the reliability of this tool was confirmed. Also, its test-retest reliability was 0.92 with a 30-day interval. The content validity of this version in the present study was obtained through the Kendall's coefficient of concordance with the assumption of 65%(24) .

**Child State-trait anxiety questionnaire (CSTA):** Child State-trait anxiety questionnaire designed by Spielberger and Gorsuch is applicable to children aged 9 to 14 years. This questionnaire has 40 items and measures two dimensions of state anxiety and trait anxiety. The questionnaire is scored as Likert with a range from 1 (never) to 4 (always) (25). Spielberger et al., reported the Cronbach's alpha coefficient of state and trait anxiety scales of 0.92 and 0.92, respectively. Also, the retest coefficients of this scale were 0.61 and 0.86, respectively, for the total of the scale was 0.94(26). Since this questionnaire has not been used in Iran, Cronbach's alpha method was used to test its reliability that for the trait and state the anxiety and the total questionnaire, the coefficients were 0.76, 0.79 and 0.78, respectively. Several professors at the University of Isfahan also confirmed its reliability.

### Methodology and Procedure

The method of this study is a clinical trial using a test (experiment) and control group, which is an applied research in terms of the purpose. The method of work is that before the intervention, two groups of tests were performed and then the training group received training in a group in 8 sessions of 60 minutes. The sessions were held at the clinic. After the

intervention on the experimental group, tests were repeated on the two groups.

Summary of sessions: The first session included the introduction of a therapist and the establishment of a therapeutic relationship (rapport) to eliminate children's fear and stress. At the second session, the relaxation training was performed through sleeping play. Third session: the identification of the emotions of children through the smiley play and helping to identify the positive and negative emotions and the conditions for creating it. Session four: Includes an introduction to how to express negative emotions and ways to create positive emotions through the play of guessing doll emotions, completing sentences deleted from the story, play of if I was in her place. Fifth session: Identifying the strengths of a person and create positive self-taking through play and poetry. Sixth session: Awareness of the concept of the locus of control and reducing feelings of guilty in events beyond the control of the child through play and show. Seventh session: Training positive emotions such as laughing and joking. Eighth session: Creating creativity and eliminating the fear of chemotherapy by using these devices as toys(27).

### Results

After conducting intervention programs on the experimental group and entering the data using statistical package for social sciences (SPSS) version 20, descriptive and inferential statistics were performed. The results are as follows:

Table 1 Demographic information of participants in the research

	Experimental group	Control group
Age mean	10.07	11.3
Frequency of gender (female)	6 (40%)	7 (46%)
Frequency of hospitalization history	3 (46%)	2 (50%)
Mean of diagnosis time	2 (45%)	2 (45%)

As shown in Table 1, the mean age in the experimental group was 10.7 years and in the

control group, it was 11.3. Six (40%) subjects of the experimental group and 7 (46%) subjects of the control group were female. 46% of the experimental group had a history of 3 times admission, while 50% of the control

group had a history of 2 times hospitalization. The mean duration of definitive diagnosis was two years in both experimental and control groups.

Table 2 Descriptive statistics related to research variables in two groups

Variable Statistics	Groups	Pre-test				Post-test			
		Mean	SD	Min	Max	Mean	SD	Min	Max
Level of pain intolerance	Experiment	73.93	6.23	63	84	68.66	4.35	60	76
	Control	72.07	4.62	62	78	72.26	5.21	62	78
Trait anxiety	Experiment	54.73	0.79	54	56	52.13	3.18	49	60
	Control	54.46	1.24	51	58	54.20	1.89	51	58
State anxiety	Experiment	56.20	2.70	52	62	52.00	4.19	46	60
	Control	<b>56.46</b>	<b>2.72</b>	<b>53</b>	<b>61</b>	<b>55.20</b>	<b>3.62</b>	<b>50</b>	<b>63</b>

As shown in Table 2, the mean score of pain intolerance, trait anxiety and state anxiety in the experimental group decreased compared to the control group in the post-test phase. To evaluate the significance of this difference, covariance analysis was used. In order to use covariance analysis, first, its assumptions

include assumption of the equality of variances (through Levin's test), the normal distribution of variables (through Kolmogorov-Smirnov), the homogeneity of regression slope was verified. Table 3 shows the results of covariance analysis.

Table 3 Results of covariance analysis for comparing the mean of pain intolerance, trait anxiety and state anxiety

Dependent variable	Stages	Sum of squares	df	Mean of squares	F	Sig	Eta value	Statistical power
Pain intolerance	Pre-test	33.60	1	33.60	1.48	0.23	0.05	0.21
	Group	114.80	1	114.80	5.05	0.03	0.15	0.58
Trait anxiety	Pre-test	7.46	1	7.46	1.09	0.30	0.03	0.17
	Group	35.62	1	35.62	5.20	0.03	0.16	0.59
State anxiety	Pre-test	4.54	1	4.54	0.28	0.59	0.01	0.08
	Group	74.71	1	74.71	4.73	0.03	0.14	0.55

As the results of Table 3 show, F value is significant in the variables of pain intolerance, trait anxiety and state anxiety at the significant level ( $P < 0.05$ ); in other words, training play therapy has been effective on increasing pain tolerance and reducing the trait and state anxiety of children with cancer.

### Discussion

The purpose of this study was to investigate the effectiveness of play therapy training on pain tolerance and trait and state of anxiety among children with cancer aged 9-12 years. The results of this study showed that play therapy increases pain tolerance and reduce the

trait and state anxiety in children with cancer. These findings are in line with the findings of

Mahmoud-ollilu et al(16), Li Chung et al (17), Scarponi and Pession(18), and Chari et al(19). In explaining the result, it should be said the main concept in the cognitive-behavioral play therapy is the correction of maladaptive cognitions because it is thought that these maladaptive cognitive cognitions lead to behaviors with anxiety. Accordingly, if cognition or, in other words, thinking changes, the behavior of a person changes. Based on this, in the play therapy based cognitive-behavioral play, it is attempted the child identify his/her cognitions, correct them and replace adaptive thinking with maladaptive

thinking(28). Play therapy in a therapeutic environment that associates pain and discomfort to child, can reduce the amount of negative emotions such as anxiety. In other words, play therapy in this environment led to elimination of the conditioning and the child experiences less negative emotions(29). Accordingly, reducing the amount of anxiety in the child can increase the ability to tolerate pain. Playing with the tools used to treat children as toys also reduces the amount of child's fear and anxiety, and the child experiences better mental health conditions. The use of various artistic practices and techniques such as painting, dramatic play, storytelling to identify and change beliefs and thoughts that are potentially maladaptive, replacing new positive thoughts with unpleasant thoughts, helping children to dominate their fears and overcoming anxiety, can make hospitalization and therapeutic processes less stressful and be effective in reducing children's anxiety(30). Plays of identification and expressing feelings, as well as playing with medical instruments and dolls, revealed child's feelings and concerns about the disease and the family, and possibly influenced the child's mood in this way. During these plays, the child could freely speak of his/her concerns and receive empathy for them and, if possible, come up with solutions. It should be noted that in the choice of emotions, we tried to maintain the balance between positive and negative emotions. Identifying emotions and expressing them makes the child better able to recognize and manage their emotions. In addition to this, the expression of emotions and feelings will led to more sympathy and empathy from people around. This can reduce the pain of long-term treatments and increase the tolerance of the child(31).

On the other hand, as trait anxiety as a personality characteristic strengthened and consolidated by experiences has not been established at this time, providing solutions for identifying emotions, managing them, and ultimately controlling negative emotions can lead to a decrease in this Kind of anxiety. Emphasizing the strengths of children and creating positive self-talking causes the child

to believe in their ability to solve problems and thereby lessen anxiety responses to unpleasant events.

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